



ANALYTICAL STUDY OF PHALATRIKADI GHRITA: AN AYURVEDIC FORMULATION

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INTRODUCTION

Triphala strengthens the muscles of the eyes and improves eyesight. It is helpful in curing various eye problems like cataracts, glaucoma, progressive myopia, and conjunctivitis. It is also used to wash the eyes, in order to reduce their redness. Triphala is very helpful in treating impaired vision.^[1] It is used in Naktandhya.^[2] Good for eye and eyesight/vision.^[3] It is essential to gratify the international standards and quality control of the drug used by convincing the drug regulatory authorities. Present study is carried out to maintain the 'quality control' of *Phalatrikadi Ghrita*^[4] by proper identification of raw materials at the basic level with the help of microscopic, morphological characteristics and Physico-chemical analysis.

MATERIALS AND METHODS

Collection of raw materials

The raw drugs for the study were procured from the Hansa Pharmacy Premnagar Asram, Haridwar Uttarakhand. The final product i.e. *Phalatrikadi Ghrita* was prepared in the Hansa Pharmacy Premnagar Asram, Haridwar Uttarakhand.

Method of preparation of *Phalatrikadi Ghrita*

The *Phalatrikadi Ghrita* was prepared by classical method of *Ghruta paka*. For *Ghruta paka* 5 kg. *Ghruta* was taken, *Kwatha dravyas*: *Haritki*, *Vibhitak*, *Amlaki*, *Shatavari*. *Kalka dravya*: *Yashtimadhu*. In a large vessel *Go-Ghruta* was poured, when it gets melted under moderate flame *Kalka dravyas* in particular ratio were added followed by addition of *Kwatha dravyas* *Haritki*, *Vibhitak*, *Amlaki*, *Shatavari*. To get final product, the contents were subjected to heat till up to *Sneha Siddhi lakshana* were observed then *Prakshepa dravyas* were added into it. The contents of *Phalatrikadi Ghrita* and there proportion is mentioned in Table no. 1.

Analytical study

Raw materials and prepared final product (*Phalatrikadi Ghrita*) were analyzed by employing various analytical parameters.

Organoleptic study

Organoleptic characteristics for various sensory characters like color, taste, odor etc and was carefully noted down.^[5] [Table no. 2].

Powder Microscopy

Powder microscopy of individual coarse powders of raw drugs was also carried out; and microphotographs were taken under the carl-zeiss trinocular light microscope attached with camera.^[6,7] Both stained and unstained images were visualized.

Physicochemical analysis

Physicochemical analysis such as loss on drying at 110°C, Water soluble extractive, Total ash, Acid insoluble ash, Alcohol soluble extract [Table no. 3]. Specific gravity at 25°C, viscosity, refractive index, tests were carried out.^[8]

Phalatrikadi Ghrita was further subjected to High Performance Thin Layer Chromatography (HPTLC) study.^[9]

HPTLC Profile

Instrument used was CAMAG make HPTLC with WINCATS 1.4.3 software and Linomat 5 sample applicator. The stationary phase used was HPTLC plates silica gel 60 F₂₅₄ and mobile phase was Toluene: Et. Acetate (90:10). The sample was prepared in methanol, and 2µl sample was applied as 8 mm band for each spot.

The plate was visualized under short and long ultraviolet (UV) radiations and density of the separated spots was recorded using scanner III. The plate was sprayed with vaniline-sulphuric acid reagent and observed in daylight. The R_f values were recorded. Peak display densitogram of PTG shows in Figure No. 14

RESULTS AND DISCUSSION

Pharmacognostical Analysis

Organoleptic evaluation was performed at two stages of preparation viz. for coarse powders and finished product (Observations of organoleptic analysis are tabulated in Table 4).

Raw herbs were authenticated and analyzed before processing because good quality products mainly depend upon genuine raw materials.

Powder microscopy characters

Coarse powders of individual Ingredients were observed under the microscope are detailed as below:

In fruit of *Haritaki*

Mesocarp cells, starch granule sand sclerides of various shapes and sizes but mostly elongated. [Figure 3, 5 and 7].

In fruit of *Bibhitak*

Lignified sclerid, tannin, trichome, simple starch grains and some stone cells found in most of mesocarp cells, [Figure 2, 4 and 6].

In fruit of *Amalki*

Lignified sclerid was found, mesocarp forms bulk of fruit, mesocarp contains large aggregates of numerous irregular silica crystals. [Figure 1].

In *Satavari root*

Annular vessels, raphides, scleriform vessels, aicular crystals, corkin surface, pitted vessel, simple fibres, starch granules were found. [Figure 8, 9 and 11].

In *Yastimadhu*

Broad pitted vessels, crystal, fibres, pitted vessels. [Figure 10, 12 and 13].

Physicochemical analysis

Results of physicochemical analysis of PTG are detailed in Table 3.

Loss on drying, Specific gravity, Viscosity and Refractive index, are in normal range. If Saponification value is more than normal range it indicates lower molecular saturated fatty acids. Higher the iodine value, the less stable will be the *Ghrit* and the more vulnerable it is to oxidation and free radical production. High iodine value *Ghrit* are prone to oxidation and polymerization and the sample becomes rancid thus decreasing the shelf life of product. If acid value is more, then chances of photo-oxidation and rancidity are more. The obtained values of these tests were found within normal limits in *Phalatrikadi Ghrita*, which indicate good quality of product. In addition, no rancidity was found in finished product.

High Performance Thin Layer Chromatography (HPTLC)

Chromatographic study (HPTLC) was carried out under 254 and 366 nm UV to establish finger printing profile. It showed 4 of spots and phyto-components with R_f values 0.35, 0.53, 0.67, 0.84 and 0.35, 0.51 were recorded, which may be responsible for expression of its pharmacological and clinical actions.

CONCLUSION

Pharmacognostical and phyto-chemical evaluation of *Phalatrikadi Ghrita* illustrated the specific characters of ingredients which were used in the preparation. Physico-chemical profile is an essential parameter for quality assurance; in present work the obtained results were found within prescribed limits. For the first time, pharmaceutical and analytical profile of *Phalatrikadi Ghrita* was established. On the basis of observations and experimental results, this study may be used as reference standard in the further quality control researches.

Table No. 1: Contents used in *Phalatrikadi Ghrita*

Name of drug	Latin Name	Part used	Ratio	Form
<i>Haritaki</i>	<i>Terminalia chebula Retz.</i>	Fruit	2	Kalka
<i>Bibhitaka</i>	<i>Terminalia bellirica Roxb</i>	Fruit	2	Kalka
<i>Amalaki</i>	<i>Embllica officinalis Gaertn.</i>	Fruit	2	Kalka
<i>Shatavari</i>	<i>Asparagus racemosus willd</i>	Root	2	Kalka
<i>Yasthimadhu</i>	<i>Glycyrrhiza glabra Linn</i>	Root	0.25	
<i>Madhu</i>			0.25	
<i>Ghrita</i>			1	

Table No. 2 Organoleptic Parameters of *Phalatrikadi Ghrita*

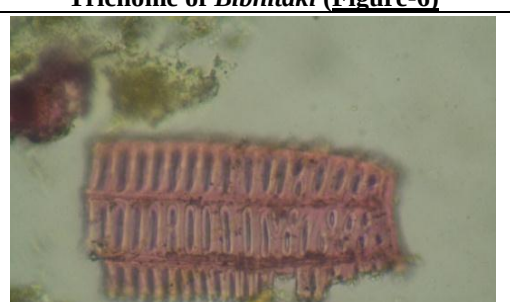
Properties	<i>Phalarikadi Ghrita</i>
Colour	Yellow Brown
Odour	Offensive
Touch	Waxy
Taste	Sweetish

Appearance	Dark
Clarity	Thick

Table No.3: Physico-chemical parameters Of *Phaltrikadi Ghrita* Analysis

Parameter	<i>Phaltrikadi Ghrita</i>
Loss On Drying	1.36%
Water soluble extractive	39.10%
Total ash	33.69%
Acid insoluble ash	2.23%
Alcohol soluble extractive	18.10%
pH	5.10

Table No. 4 Pharmacognostical Analysis

	
Lig.scleroid of <i>Amlaki</i> (Figure-1)	Lig. Scleroid of <i>Bibhitaki</i> (Figure-2)
	
Mesocarp cells of <i>Haritaki</i> (Figure-3)	Tannin content of <i>Bibhitaki</i> (Figure-4)
	
Starch granule of <i>Haritaki</i> (Figure-5)	Trichome of <i>Bibhitaki</i> (Figure-6)
	
Scleride of <i>Haritaki</i> (Figure-7)	Annular vessels <i>Satavari</i> (Figure-8)

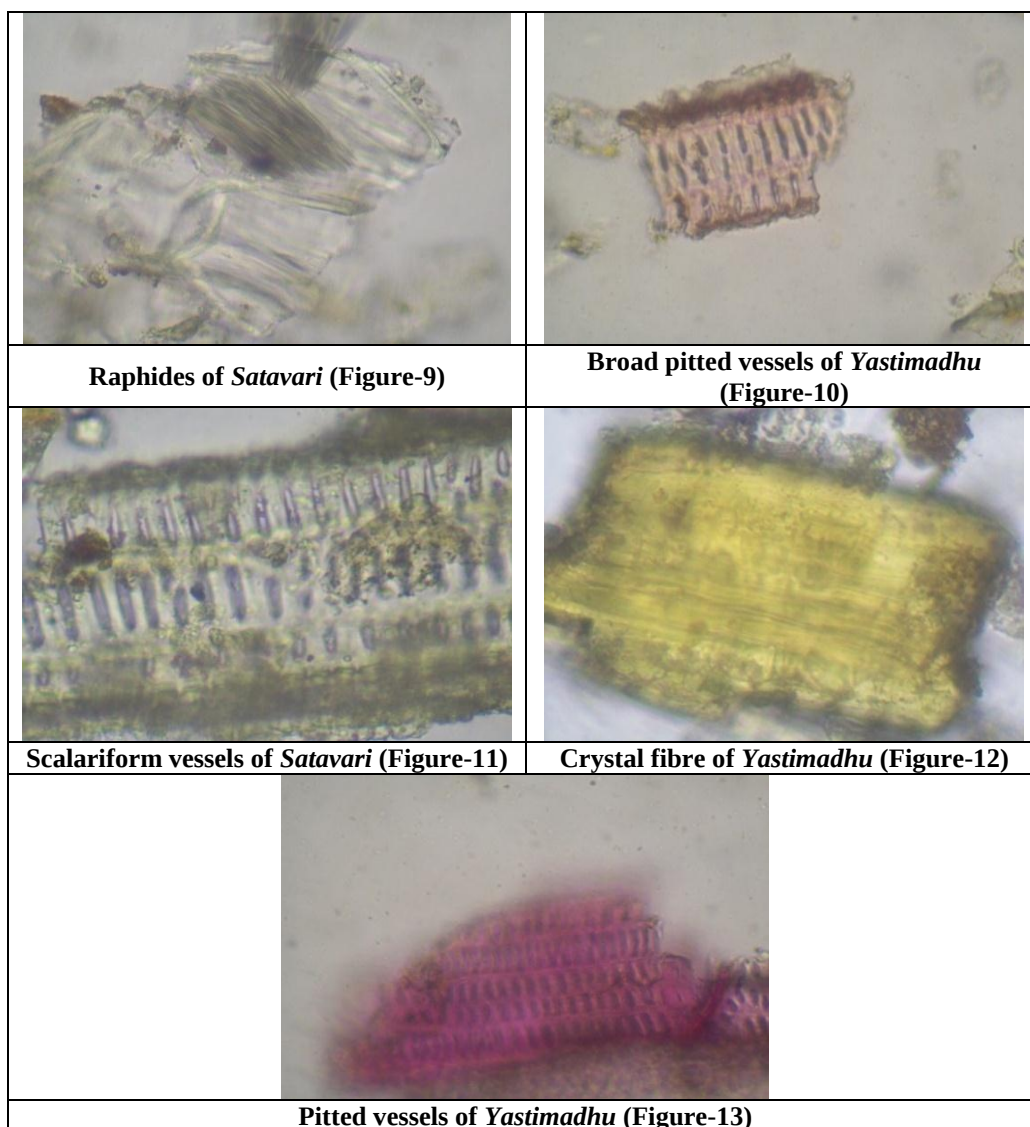
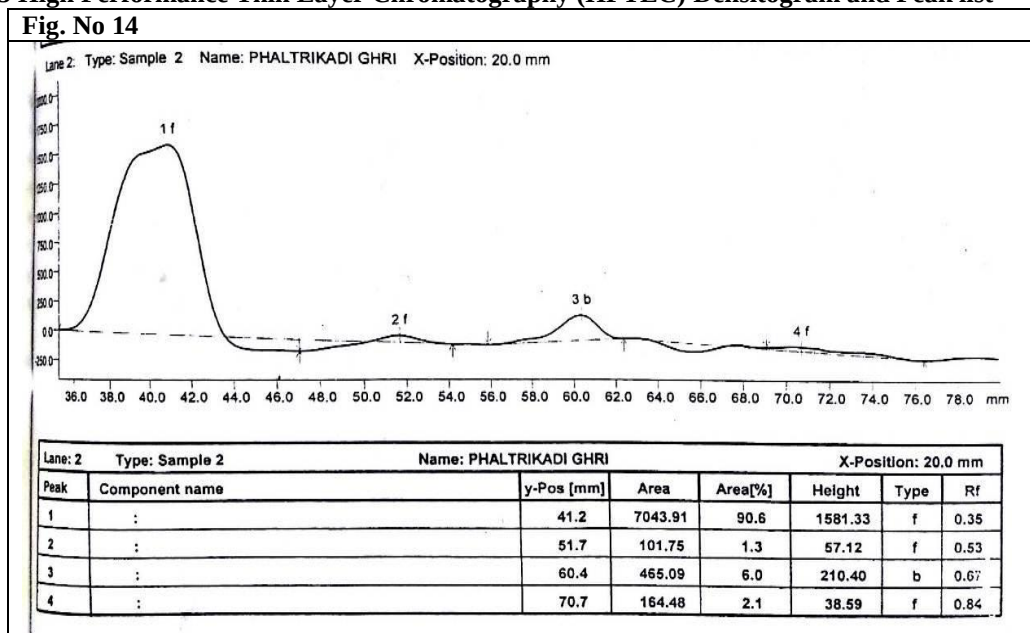


Table no. 5 High Performance Thin Layer Chromatography (HPTLC) Densitogram and Peak list



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